

B.Sc. Semester - 4 (CBCS) Examination
April/May -2022 [NEW COURSE]
Physics-Ph401 (Core)

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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Q - 1 A Answer the following questions (any two). **10**

1. Discuss Biot - Savart's law.
2. Give the quantitative explanation of cycloid motion.
3. Explain straight line currents.

B Answer the following questions (any one). **04**

1. Explain Lorentz force law.
2. Derive vector potential.

Q - 2 A Answer the following questions (any two). **10**

1. Explain working and results of porous - plug experiment.
2. State and prove Carnot's theorem.
3. Explain specific heat of gases.

B Answer the following questions (any one). **04**

1. Describe zeroth law of thermodynamics.
2. Derive Mayer's formula.

Q - 3 A Answer the following questions (any two). **10**

1. Explain change in entropy in reversible and irreversible process.
2. Derive Stefan - Boltzmann's Law.
3. What is called black body? Explain black body in practice.

B Answer the following questions (any one). **04**

1. Describe application of entropy principle.
2. Explain concept of entropy.

Q - 4 A Answer the following questions (any two). **10**

1. Explain in brief thermistor.
2. Describe the output characteristics of a JFET and discuss its important points.
3. Explain principle, construction and working of LED.

B Answer the following questions (any one). **04**

1. Write the principle, construction and working of solar cell.
2. Show how a UJT can be used as a relaxation oscillator.

Q - 5 A Answer the following questions (any two). **10**

1. What is logic gate? Explain NAND gate and NOR gates.
2. State and prove De Morgan's Theorems.
3. State and explain single variable theorem (any five).

B Answer the following questions (any one). **04**

1. Explain advantages and disadvantages of digital electronics.
2. Write a note on encoder and decoder.
